

3. Parameres broad in the middle, phallobase oval, aedeagus pointed *lineifrons* (Chaud.)

TAXONOMIC IMPORTANCE

The oval shaped parameres and long pointed aedeagus of male genitalia of genus *Pheropsophus* show resemblance to other genera of Harpalini, whereas the structure of parameres and aedeagus greatly differs at both generic and species levels. Parameres of *Chlaenius* are elongated, and narrow whereas they are elongated and hairy in *Trechus* and *Tachys*, and pointed and with bristles in *Abacetus*. Aedeagus of *Diplocheila* is broad apically and narrow proximally. The oval shaped paramere and long pointed aedeagus of the studied species

of the genus *Pheropsophus* resemble and show similarities with those of other genera of the family Carabidae.

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29. CILIATE INFESTATION ON THE PHYTAL HALACARIDAE (ACARI) FROM THE KOVALAM BEACH (KERALA COAST)

The epibiotic ciliate infestation on the macrofaunal assemblages of Pelagial, benthal and phytal realms in the marine environment are well known. However, the epibiotic ciliate infestations on the meiofauna and their impact on the eco-biology of the meiofauna are less known.

Hagerman (1966, *Ophelia* 3: 1-43) reported an unidentified species of Halacaridae (Acari) infested by ciliates found among the phytal sediments of *Fucus serratus* from Oresund.

While studying the phytal meiofauna from the Kovalam beach (Kerala coast), some halacarids were observed to be heavily infested by peritrichous ciliates and are reported here. The present observation is of relevance in the ecobiology of the phytal Halacaridae which are known to serve as food for higher trophic levels in the littoral environments.

TABLE I
PERCENTAGE COMPOSITION OF CILIATE
INFESTATION IN DIFFERENT HALACARID SPECIES

Name of Species	July 1987	October 1987
<i>Rhombognathus scuttutus</i>		
Male	40	30
Female	15	13
<i>R. papuensis</i>		
Male	5	40
Female	40	17
<i>Rhombognathus</i> nymphs and larvae	0	0
<i>Copidognathus</i> spp.	0	0
	0	0
<i>Agauopsis brevipalpus brevipalpus</i>	0	0

Among different species of Halacaridae, many *Rhombognathus scuttutus* and *R. papuensis* were

infested by ciliates. The ciliate infestation, both qualitatively and quantitatively appears to be influenced by the relative size of the meiofaunal host and its taxonomic position. Ciliate infestation was absent in *Copidognathus* spp. and *Agauopsis brevivalpus brevivalpus* (Table 1). *Rhombognathus* larva and nymph were also not found infested by the ciliates.

The number of ciliates per halacarid ranged between 8-10. The attachment of the ciliates is confined to the exo-skeleton or cuticular zones of the host.

The impact of the ambient biotic and abiotic parameters besides the physiognomy of the phyta on the epibiotic infestation needs investigation. The halacarid found in the sandy habitat (Psamobiont form, interstitial form) were devoid of ciliate infestation. Most probably, the physical angularities of the sand grains cause attrition and dislodgement or abrasion of the attached epibiotic life while the host animal burrows into the sediments. However, the phytal sediments studied

from the Kovalam beach are sandy in nature. The canopies of the littoral phytal realm appear to act as shock absorbers against wave action. The physical frictional force of attrition of the sand grains is ameliorated, facilitating settlement of epibiotic life.

The ciliate infestation on the meiofauna may possibly affect their competitive ability, reproduction, locomotion and bio-energetics.

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30. *DELPHINIUM ALTISSIMUM* WALL. (RANUNCULACEAE) — A NEW RECORD FOR SIKKIM HIMALAYA

(With a text-figure)

During my recent plant survey of West Sikkim in September 1994, I came across a *Delphinium* Linn. in Sardong. The plant was identified as *Delphinium altissimum* Wall. which had not been recorded earlier from Sikkim Himalayas. The voucher specimens are deposited in the herbarium of the Botanical Survey of India, Gangtok.

The description of the species along with a diagram (Fig. 1) is given below.

Delphinium altissimum Wall. in Hook. J.D., Flora British India 1:126.1888.

Plant 69-106 cm tall. Stem terete but slightly grooved on one side, sparsely hairy, much branched, with few dimorphic leaves. Radical leaves 2-4, with 20-34 cm long petioles; lamina 5-13 x 6.3-15 cm. broader than long, 5-7 fid, lobes broadly cuneate

3-lobed, coarsely toothed, cordate at the base, 5-7 nerved, pale green above and whitish green below, puberulous. Cauline leaves sessile, linearly branched, 3-lobed, entire, alternate, sparsely hairy. Inflorescence a raceme, 7-18 cm long, terminal or axillary; raceme 2.5-9 cm long with 2-6 pedicellate flowers, terete, sparsely hairy; Peduncle 4.5-9 cm long, terete sparsely hairy; ovary 1.1-2.5 cm long with 2-3 linear bractioles. Flowers 2.5-2.6 cm across or 2.8-3 long, whitish blue, sparsely hairy, spreading with 2 cm long spur behind. Spur subulate, slightly incurved, sparsely hairy. Sepals 5 free; dorsal sepal 2.65-2.7 x 0.6-0.8 cm, sparsely hairy externally elliptic-ovate, apiculate tip with tubular base enclosing spur; lateral sepals 4, unequal, elliptic-oblong, upper whitish blue